

Traffic Effects on a Heavy Soil

Aim: To quantify the benefits of Tramline Farming in a low rainfall area.

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Farmer: Keith Carter

Location: East Wubin, Jibberding Hall Road

Background: Much information shows that tramline farming is very profitable on sand plain soil. There is less information for heavier textured soils in WA. This is one of 4 trials on heavy texture soils, with a sound design using on-farm equipment.

Trial Details:

| | |
|---|---|
| Plot size and replication | 20-50m long runs of farm cropping equipment, including a deep ripped section and replicated four times in a 'criss-cross' design |
| Soil type | Alkaline clay (6.1 to 7.2 at 500mm) with a sandy surface |
| Sowing date and rates | 2 nd June 2003 Arrino at 70 kg/ha and 70 kg/ha Agstar |
| Conditions at sowing and traffic treatments | Moist |
| Machinery | Nichols bar, knife points and press wheels to seed. 9370 Case with radials to seed; 6t truck with 15/20 radials for spraying and spreading treatments |
| Traffic treatments | Run at right angles to the direction of sowing on 2 nd August. For 'spraying' the tank was full, for spreading the tank was 1/2 full |
| Fertiliser post | 80 kg/ha urea |
| Herbicides and Insecticides | Pre; 400g Diuron and 1 L/ha Sprayseed Post; 5g Logran and 400 mL MCPA |
| Paddock History | 2002 = Pasture |

There is much more detail in the Agribusiness Crop update paper 'Compaction of 'heavy' soils by cropping traffic and estimated benefits of Tramline Farming'.

Results:

| Treatment | Yield | % loss by seeding | % loss by spraying | % loss by spreading | lsd |
|-----------|-------|-------------------|--------------------|---------------------|--------------|
| Ripped | 3.86 | 35 | 30 | 35 | 10.4 traffic |
| Unripped | 2.94 | 30 | 20 | 31 | 0.63 ripping |

Summary:

- Normal traffic can easily reduce grain yield on this clay soil.
- Deep working with the air seeder before seeding helped improve water and root penetration with localised disturbance to about 200mm and improved yield by about 900 kg/ha. Further investigations of the depth of cultivating clay are needed.
- A simple analysis of these traffic effects showed a possible \$20/ha benefit in the first year of a tramline farming system after 'deep ripping' and \$16/ha benefit without 'deep ripping'. This is encouraging and in the same range as calculated for sands at Mullewa.
- This trial design is not very hard to use to quantify tramline farming benefits.

Technically reviewed by: Bindi Webb